# Kiwi Bubbles Pricing Strategy

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# 1. Logit model without segmentation

1) Own price elasticities:

| | Own price elasticity | Probability change (1% price change) | Explanation |
|---|---|---|---|
| KR | 4.13 | 0.82 | When the price of KR increases one percent, the choice probability of KR decreases by 4.13 percent, the choice probability of KR will be 0.190 (The original choice probability is 0.198). |
| KB | 4.26 | 0.75 | When the price of KB increases one percent, the choice probability of KB decreases by 4.26 percent, the choice probability of KR will be 0.168 (The original choice probability is 0.175). |
| MB | 4.07 | 0.84 | When the price of MB increases one percent, the choice probability of MB decreases by 4.42 percent, the choice probability of KR will be 0.183 (The original choice probability is 0.191). |

2) Cross-price elasticities:

| | Cross price elasticities | Probability change (1% price change) | Explanation |
|---|---|---|---|
| KR vs. KB | 1.02 | 0.18 | When the price of KB increases one percent, the choice probability of KR decreases by 0.91 percent. |

| | | | |
|---|---|---|---|
| KR vs. MB | 0.96 | 0.19 | When the price of MB increases one percent, the choice probability of KR decreases by 0.96 percent. |
| KB vs. KR | 1.02 | 0.18 | When the price of KR increases one percent, the choice probability of KB decreases by 1.02 percent. |
| KB vs. MB | 0.96 | 0.17 | When the price of MB increases one percent, the choice probability of KB decreases by 0.96 percent. |
| MB vs. KB | 0.91 | 0.17 | When the price of MB increases one percent, the choice probability of KB decreases by 0.91 percent. |
| MB vs. KR | 0.96 | 0.13 | When the price of MB increases one percent, the choice probability of KB decreases by 0.96 percent. |

All three products are relatively inelastic, which means consumers of these three soft drinks are not price sensitive. The cross elasticity of all combinations are quite small and similar, which means the substitution relationship among these soft drinks are relatively weak.

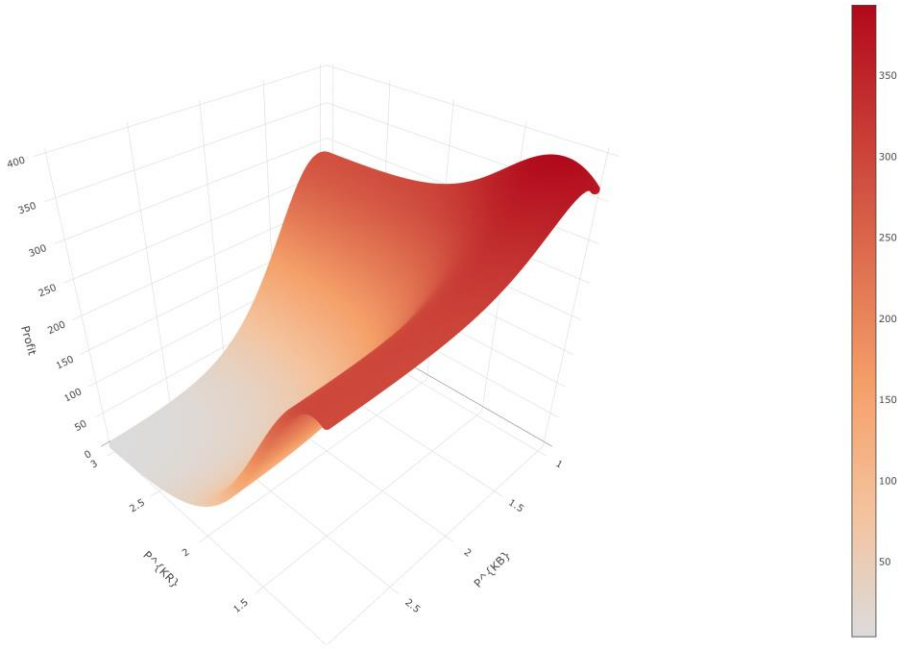
However, consumers are price sensitive to soft drinks, so the own price elasticity should be larger (According to secondary research, the elasticity is around -1.37). Meanwhile, the soft drink industry is very competitive, switching brands for consumers should be relatively easy. Products within the same category but different brands should be close substitutes with large cross price elasticities. Thus, the pattern we observed is unreasonable.

3) Optimal prices and maximum profit (without segmentation)

Optimal price for KB = $1.16

Optimal price for KR = $1.16

Maximum profit = $393.41



## 2. Logit model with segmentation

**Segmentation**

When deciding the number of segments, we considered these factors:

1) different products can serve different segments of consumers and identify consumers' various preferences and price sensitivities;

2) enough number of observations in each segment to ensure the reliability of the coefficients;

3) potential marketing expense that will incur when increasing segments.

After trying different clusters and making trade-off between reliability and flexibility, we finally decided 7 (6 clusters+1 without demographic information) segments.

| | Segment 1 | Segment 2 | Segment 3 | Segment 4 | Segment 5 | Segment 6 | Segment 7 |
|---|---|---|---|---|---|---|---|
| Segment share | 9.47% | 14.76% | 19.22% | 11.42% | 15.60% | 8.36% | 21.17% |

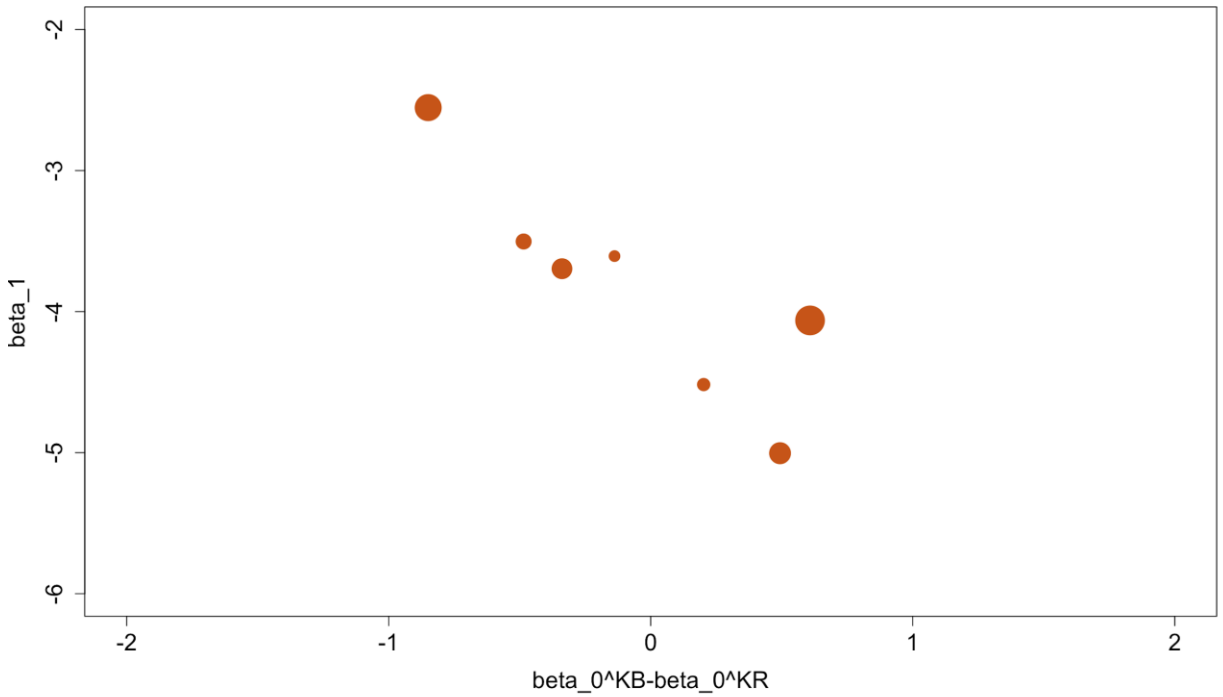
```
> coef.est
  segment intercept.KB intercept.KR intercept.MB price.coef
1       1     4.808604     4.606528     5.629481  -4.517302
2       2     4.354360     4.692998     4.150623  -3.695810
3       3     2.521333     3.370624     2.253880  -2.554080
4       4     3.868998     4.354056     4.052386  -3.502896
5       5     5.823323     5.329806     6.050890  -5.003794
6       6     3.761442     3.899505     3.816808  -3.606284
7       7     5.117430     4.509340     4.544963  -4.062526
> coef_noseg
KB:(intercept) KR:(intercept) MB:(intercept)         price
      4.253157       4.362403       4.204396      -3.737931
```

As the coefficients showed, when we didn't do segmentation, consumers have similar preferences toward each product. With segmentation, we can see different segments of consumers show their preferences toward different products. Segment 2, 3, 4 and 6 prefer KR; Segment 7 prefer KB; Segment 1 and 5 prefer MB.

Moreover, each segment shows different price sensitivities. Segment 2, 4 and 6 have similar price sensitivity. Segment 1, 5 and 7 have relatively higher price sensitivity than the other segments. Segment 3 has less price sensitivity than the other segments.

KB should be positioned to Segment 7, which has the largest segment share (21.17%) although we do not have their detailed demographic information.

To be more visual, we plotted the following graphs. The horizontal axis represents how much each segment of consumers prefers KB over KR. The vertical axis shows their price sensitivity.



**Strategic Importance of Launching KB**

| | | Without Launching KB | Launching KB |
|---|---|---|---|
| Without Segmentation | Optimal Price of KR | $1.03 | $1.16 |
| | Optimal Price of KB | | $1.16 |
| | Kiwi Maximum Profit | $251.63 | $393.41 |
| | MB Profit | $90.26 | $90.97 |
| | Choice probability of KR | 47.48% | 31.43% |
| | Choice probability of KB | | 28.18% |
| | Choice probability of MB | 9.71% | 9.78% |
| With Segmentation | Optimal Price of KR | $1.02 | $1.18 |
| | Optimal Price of KB | | $1.15 |
| | Kiwi Maximum Profit | $247.07 | $394.85 |
| | MB Profit | $89.91 | $90.63 |
| | Choice probability of KR | 47.51% | 30.33% |
| | Choice probability of KB | | 29.07% |
| | Choice probability of MB | 9.67% | 9.74% |

After launching KB (without doing segmentation), the choice probability of KB is 28.18%, which indicates KB has its popularity among consumers. Meanwhile, consumers' price elasticity decreased. We can increase our price from $1.06 to $1.16 and have our profit increased by 19.83%. However at this moment, we can hardly tell consumers preferences for different products. These three products are similarly popular.

When launching KB with segmentations, the choice probability of KB increased by 3.16%. It takes shares from both KR and MB. This is mainly because we have KB launched to target Segment 7 which has a large share. We can also see consumers' different price sensitivities through segmentation helping us better set the prices. Consumers (Segment 2, 3 and 4) who prefer KR have relatively lower price sensitivity, so we can set the KB at a higher level $1.18. For Segment 7 consumers who have relatively higher price sensitivities, we can set KB at a lower price $1.15.

Overall, compared to our current situation (without launching KB and without segmentation), our profit increased by 36.27%. Since Kiwi already has better brand awareness, we are now also serving consumers who have different preferences with different products and can help gain customer loyalty.

**Elasticity change with segmentation**

1) Own price elasticities:

| | Own price elasticity | Probability change (1% price change) | Difference between elasticity with segmentation and without segmentation |
|---|---|---|---|
| KR | 2.94 | 0.856 | After segmentation, consumers of different segments show different preferences and price sensitivities.<br><br>Consumers who prefer KB and KR show less price sensitivity than those who prefer MB and Consumers who prefer KR are relatively less price sensitive than those who prefer KB. While consumers who prefer MB are more price sensitive. |
| KB | 3.02 | 0.914 | |
| MB | 5.01 | 0.486 | |

2) Cross-price elasticities:

| | Cross price elasticities | Probability change (1% price change) | Substitution pattern |
|---|---|---|---|
| KR vs. KB | 1.05 | 0.318 | Cross price elasticities of MB vs. KB and MB vs. KR are relatively higher, and the probability changes caused by 1% price change are also larger. This indicates that since consumers who prefer MB are price sensitive, small changes of prices of KB/KR will largely affect the purchase of MB.<br><br>The relationship also works when we look at the cross elasticity of KB vs. KR, because consumers who prefer KB are more sensitive to price, so small changes of prices of KR will also largely affect the purchase of KB. |
| KR vs. MB | 0.49 | 0.048 | |
| KB vs. KR | 1.20 | 0.336 | |
| KB vs. MB | 0.56 | 0.054 | |
| MB vs. KB | 1.17 | 0.354 | |

| | | | |
|---|---|---|---|
| MB vs. KR | 1.21 | 0.352 | |

## 3. Understanding strategic responses

Under pricing war scenario, Kiwi and Mango will react to each other's price changes for three rounds.

Round 1: MB = 1.43;  KB = 1.15;  KR =1.18

Round 2: MB = 0.96;  KB = 1.03;  KR = 1.07

Round 3: MB = 0.92;  KB = 1.02;  KR = 1.06

Profit KR+KB = 265.1681

In each round, both Kiwi and Mango lower their prices, and this pricing war eventually converges at a Nash Equilibrium: MB = $0.92, KB = $1.02;  KR = $1.06

Under pricing war:

a. Not launch KB:

MB = $0.94;  KR = $0.96

Profit of KR = $169.69

Probability of KR = 36.89%

Probability of MB = 37.54%

b. Launch KB:

MB = $0.92;  KB = $1.02;  KR = $1.06

Profit of KR+KB = $265.17

Probability of KB = 25.87%

Probability of KR = 21.45%

Probability of MB =  36.35%

To analyse how the strategic advantage of launching KB differs under pricing war, we focus on three aspects: 1) profit performance; 2) choice probability of our products; 3) segmentation and positioning.

1) Under the pricing war, launching KB allows us to set a higher price for both KR and KB, which also brings a higher profit margin of $0.52 for KB and $0.56 for KR (compared with $0.46 if we do not launch KB). The total profit of selling both KR and KB has increased by 56.27% compared to when solely selling KR.
2) The choice probability of MB will decrease if we choose to launch KB, so this strategy also helps us to capture more customers who used to purchase MB. Launching KB could prevent Mango from capturing more market share, though there might be cannibalization.
3) Launching KB can help us better target more customers in the market, and now our target consumers are less price sensitive and have a higher willingness to pay. So we could extract more values from those customers by setting a higher price to gain a higher profit margin.